Synthesis of array antenna pattern using discretization of elementary geometrical functions

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Abstract

This paper presents the discrete array antenna pattern synthesis that the side lobe level (SLL) is naturally and uncontrollably occurred. The current distributions weighted to the array elements are determined by using the continuous aperture discretization method. The uniform and Binomial distributions are first considered as the conventional approaches, and the triangular, quadratic, circular, Gaussian, cosine, and squared cosine excitations are subsequently applied as the tapered minor lobe methods. The radiations characteristics such as radiation pattern, side lobe level ,beamwidth; both half-power beamwidth and firth null beamwidth, directivity, and beam efficiency are investigated. Discussion on marit and demerit of each array are included

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